

$$1) \sin 30^\circ + \cos 180^\circ + 2 \tan 135^\circ = \frac{1}{2} + (-1) + 2(-1) = -2 \frac{1}{2}$$

$$2) -\cos 150^\circ + \sin 120^\circ - 3 \sin 240^\circ = -(-\frac{\sqrt{3}}{2}) + \frac{\sqrt{3}}{2} - 3(-\frac{\sqrt{3}}{2}) = \frac{5\sqrt{3}}{2}$$

$$3) \cot 120^\circ + 2 \cot 240^\circ - 2 \tan 150^\circ = -\frac{\sqrt{3}}{2} + 2(\frac{\sqrt{3}}{2}) - 2(-\frac{1}{\sqrt{3}}) = \frac{4\sqrt{3}}{3}$$

$$4) \cos(\sin 40^\circ) + \sin(\cos 40^\circ) = 2$$

ک سوال ۱ را در انتهای صفحه دوم

$$a^2 + a = \frac{2a + a + 2}{2a}$$

$$a^2 + a - 2 = \frac{(a+2)(a-1)}{2a} \Rightarrow a > 0 \rightarrow a = 1$$

$$1 + 2 = 3$$

$$x+1 > 2 \quad x > 1$$

$$x+1 < -2 \quad x < -3$$

$$f(a) - b = a - 4$$

$$a + b = 24$$

$$\text{الف) } \frac{1}{x^2(x-2)}$$

$$\mathbb{R} - \{0, 2\}$$

$$\text{ب) } \frac{1}{x^2(x+2) + 2(x+2)}$$

$$\mathbb{R} - \{-2\}$$

$$\text{الف) } y = \sqrt{x^2 - 1} + \sqrt{x - 2}$$

$$\Rightarrow x \geq 2 \quad [2, +\infty)$$

$$\frac{-1+1}{+1-1+}$$

$$\frac{2}{-1+}$$

$$\text{ب) } y = \frac{\sqrt{4-2x}}{\sqrt{4x-4}}$$

$$\frac{2}{+1+}$$

$$\frac{2}{-1+}$$

$$b - \frac{r}{x} = 0 \quad b = r$$

$$\frac{9x}{r} - a = 0 \quad a = 12$$

$$\frac{b}{a} = \frac{1}{12}$$

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الف) $\sqrt{\frac{(x-r)(x+r)}{(x-r)(x+r)}}$ $\frac{-r}{+1} \frac{-r}{-1} \frac{r}{-1} \frac{r}{+1} \quad (-\infty, -r) \cup (r, r) \cup (r, +\infty)$

ب) $\sqrt{\frac{(x-1)(x-r)(x+r)}{(x+1)(x-r)(x+r)}}$ $\frac{-r}{+1} \frac{-r}{-1} \frac{-1}{+1} \frac{1}{-1} \frac{r}{+1} \frac{r}{-1} \quad (-\infty, -r) \cup [-r, -1) \cup [1, r) \cup [r, +\infty)$

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الف) $r[x] - r > 0 \quad r[x] > r \quad [x] > r \quad [r, +\infty)$

ب) $r[x] > \infty \quad [x] > \frac{\infty}{r} \quad [r, +\infty)$

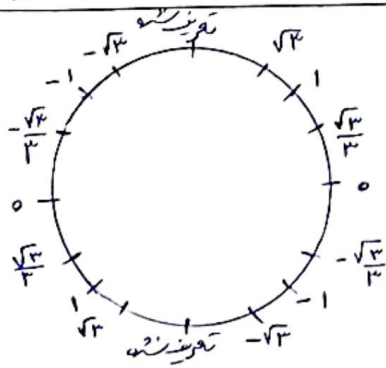
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الف) $y = \sqrt{\frac{x+1}{|x-r|}}$ $+ \sqrt{\frac{4-x}{x^2+r^2}}$ $\Rightarrow (-\infty, -1] \cup (r, +\infty)$
 $\Rightarrow (-\infty, -r) \cup (-r, r)$
 $\Rightarrow (-\infty, -r) \cup (-r, -1] \cup (r, r)$

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ب) $y = \sqrt{[x]-r} + \sqrt{r-[x]} \quad (-\infty, r) \cap [r, +\infty) = \emptyset$

$[x]-r > 0 \quad [x] > r \quad x > r \quad r-[x] > 0 \quad [x] < r \quad x < r$



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